


**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5**

OCT 13 1998

MEMORANDUM

SUBJECT: Joliet Army Ammunition Plant NPL Sites
National Remedy Review Board Recommendations

FROM: William E. Muno, Director
Superfund Division 

TO: Bruce K. Means, Chair
National Remedy Review Board

Thank you for the National Remedy Review Board's (NRRB) comments on the proposed remedy for the Joliet Army Ammunition Plant (JOAAP) National Priority List sites. The Region appreciates the Board's efforts in reviewing the sites and offers the following responses to the comments.

COMMENT - The Board supports the Army's "limited action alternative" for ground water actions at the site. However, additional analysis will be necessary to evaluate the effectiveness of natural attenuation. The Army should define in its decision document the process by which it would invoke a contingency remedy and the data needed to do so. The Board refers the Army to OSWER Directive # 9200.4-17 for more specific guidance.

RESPONSE - The Region fully concurs with this comment. The Region and the Illinois EPA (IEPA) had already made a similar comment to the Army and have held discussions with the Army to establish a process for evaluating the effectiveness of natural attenuation and identifying contingency remedies. The Region distributed copies of OSWER Directive # 9200.4-17 to all key Army personnel associated with the project on December 16, 1997.

The Record of Decision (ROD) discusses that natural attenuation models will be developed during remedial design to refine predictions of the rate of contaminant reduction and the ultimate time required for contaminant levels in groundwater to be lowered to below the cleanup goals. An integral component of the natural attenuation models will be an extensive groundwater monitoring program. The ROD further states the Army will summarize and report on the effectiveness of the natural attenuation remedy at least every five years. The initial report will include a scientific and defensible review of the impact which contingency options would have on the remedy time frames. Contingency remedies will be developed and implemented if and when the EPA, IEPA, and Army determine the limited action alternative is not effective.

COMMENT - Toluene tank farms have a history of light non-aqueous phase liquid (LNAPL) ground water contamination problems. Given this, the Army should ensure their investigations have evaluated the potential for subsurface LNAPL contamination in the toluene tank farm area.

RESPONSE - The Region concurs with this comment. The central tank farm has a small but a persistent toluene plume. Toluene typically degrades in groundwater and we do not believe it could persist unless it is being fed by an LNAPL, possibly leaching from still bottoms in the tanks, leaks from underground piping, or toluene saturated soil. The Army's liquidation contractor is scheduled to demolish and remove the toluene tanks. They have been informed of the existence of the plume and have been requested to look for possible sources.

COMMENT - The National Contingency Plan (NCP) sets forth program expectations to treat principal threats wherever practicable. Another expectation is to contain low level threats, because treatment for these wastes may not be cost effective. The NCP also states that, for many sites, EPA will use a combination of treatment and containment. For this site the information presented to the Board did not fully explain the extent to which the explosives-contaminated soils constitute principal threat wastes. The Board believes that less costly containment alternatives may be adequate for at least some of these materials, given future land use and groundwater considerations at the site. The Army should further explore these alternatives or more thoroughly explain in the decision document its rationale for choosing treatment over containment.

RESPONSE - The Region believes the remedy proposed for the soils operable unit does represent a good balance between treatment and containment. Investigations conducted at the sites yielded an estimate of approximately 912,000 cubic yards of soil with contaminants above the cleanup goals requiring remediation. The contaminants found at the highest concentrations at JOAAP, or principal threat wastes, are explosives in soil. Treatment (bioremediation) is recommended for all 185,000 cubic yards of soil contaminated with explosives above the cleanup goals. Containment alternatives are recommended for the remaining 718,000 cubic yards of contaminated soil. The Region concurs with the recommendation that the Army should more thoroughly explain this balance of treatment and containment for the soils operable unit in the decision document.

COMMENT - The Board recognized the difficulty in establishing ecological risk-based preliminary remediation goals for explosives at the sites, and recommended the Army consider implementing a monitoring plan to verify that human health preliminary remediation goals (PRGs) will allow for the recovery of a diverse ecosystem.

RESPONSE - The Region concurs with this recommendation. As a result of comments received during finalization of the ROD regarding the protectiveness of the remedies for ecological receptors, the EPA, IEPA, and Army determined the actions for most of the land at JOAAP that is currently managed by or intended for the U.S. Department of Agriculture (USDA) as the Midewin National Tallgrass Prairie will be identified in the ROD as interim actions. Exposure

levels for ecological resources that are protective of the environment and compatible with the development of the Midewin National Tallgrass Prairie will be established by a site-specific biological technical assistance group (BTAG). Final remedial actions for the Midewin National Tallgrass Prairie will be selected in accordance with the NCP. The EPA, IEPA, and Army have agreed that a biomonitoring program is not currently necessary since final actions for most of the Midewin National Tallgrass Prairie are not being selected at this time.

COMMENT - The Army should revise the PRGs for polychlorinated biphenyls (PCBs) and lead to be consistent with EPA guidance, future land use, and the ecological risk assessment for the site.

RESPONSE - The Region believes the PRGs for PCBs and lead used for JOAAP are consistent with EPA guidance, future land use, and the ecological risk assessment for the site.

The PCB contaminated soils at JOAAP are found only on the property to be part of the Midewin National Tallgrass Prairie, which will be used for recreational purposes. The areas of JOAAP to be used for industrial purposes are not contaminated with PCBs. PCB cleanup levels were established, in part, using the PCB Spill Cleanup Policy under Toxic Substances Control Act for non-restricted access areas. At JOAAP, non-restricted access cleanup levels of 1 mg/kg for surface soils (upper 10 inches of soil) and 10 mg/kg for subsurface soils are the recommended PRGs. Additionally, the current use PRG calculated for the upland sandpiper for PCBs is 4 mg/kg. The 1 mg/kg limit for PCBs at the surface should be protective of ecological receptors.

The recommended soil PRG for lead at JOAAP is 1,000 mg/kg. This is the upper end of the range established by OSWER Directive #9355.4-02. EPA has refined its approach in addressing health risk associated with exposure to lead, and has developed the Integrated Exposure Uptake Biokinetic (IEUBK) Model to determine soil lead levels as low as 400 mg/kg could be of concern for children in a residential setting. At JOAAP, exposure of children is likely to be substantially less frequent than could occur in a residential setting. Adults, such as industrial workers, are less sensitive to the effects of lead. Considering these factors, a lead PRG of 1,000 mg/kg would be unlikely to pose risks to industrial workers or recreational site users.

COMMENT - The Army should explain its rationale for addressing subsurface soil. This explanation should consider the potential for soil contamination as a continuing source of groundwater contamination, the exposure assumptions used in establishing the PRGs (for the protection of health and/or environmental effects), and the incremental costs associated with addressing subsurface soils.

RESPONSE - The Region concurs with the recommendation. Due to the high silt and clay content of most of the soils at JOAAP the bulk of the explosives contamination is near the surface, one or two feet deep. There are a few spots where the depth of contaminated soil is up to five feet due to the existence of conduits to deeper layers (around building foundations) and at areas that were subjected to repeated spills and disposal. The deeper material constitutes less

than 10% of the overall volume so its effect on the remedy cost is not great. The exposure assumptions used in establishing the PRGs did not distinguish between surface and subsurface soil since the depth of soil contamination is generally less than a few feet. The Region believes that all contamination greater than the PRGs should be removed. Clean up of soils will also serve to eliminate continuing sources of groundwater contamination, a necessary component for the natural attenuation remedy proposed for groundwater.

COMMENT - The Army should clarify the rationale for selecting a more conservative reference dose for tetryl than found in HEAST.

RESPONSE - The Region agrees the rationale behind the tetryl-picric acid PRG is not clearly presented. The value in HEAST for tetryl is given the lowest confidence rating available in the system. Upon reviewing the literature on tetryl we found there is very little basis for the number in HEAST. The number in HEAST yields a PRG of 20,000 mg/kg. A PRG of 4,100 mg/kg was adopted for the combined family of tetryl, picric acid and picramates for the following reasons. The first aerobic breakdown products of tetryl are picric acid and picramates which are stable under aerobic conditions. There are some data available on the toxicity of picric acid which yield a PRG of 4,100 mg/kg under the industrial scenario. The bioassay field screening tests used at JOAAP respond to both picric acid and tetryl so we actually measured both compounds when determining the nature and extent of contamination. Lastly, the HEAST derived PRG of 20,000 mg/kg may not be protective of ecological receptors since grasses may not become established at this concentration.

COMMENT - The Board is concerned that the Army's maintenance worker exposure scenario used to calculate the PRGs for the manufacturing and load-assemble-package areas may be too conservative, given the future land use.

RESPONSE - The maintenance worker exposure scenario was not used to calculate the PRGs. The maintenance worker exposure scenario was used to estimate current and future risk due to exposure to soil and sediment in the baseline risk assessment. PRGs for contaminants in soil and sediment were calculated for both industrial users and recreational park users. The recreational PRGs represent the more stringent value derived for a hunter or a park user.

COMMENT - CERCLA may not require the removal of sulphur-contaminated soil as a hazardous substance in Soil Remediation Unit (SRU) 7, although the Board supports the Army's plans to do so. The Army should clarify in its decision document their rationale for the planned soil removal.

RESPONSE - The Region concurs with this recommendation and has asked the Army to clarify its rationale for the planned soil removal. Raw sulphur is not a hazardous material under CERCLA but it has caused low pH violations of the NPDES discharge permit and it inhibits plant growth in its vicinity due to the formation of sulfuric acid. The Region supports the Army's decision to remove it.

If you have any questions regarding these responses to comments please contact Diana Mally at (312) 886-7275.